

REMARKS

Claims 1, 7-8, 11, 17-18 and 51-56 are pending in this application, of which claims 1 and 11 have been amended. No new claims have been added.

Claims 1 and 11 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

Accordingly, claims 1 and 11 have been amended to eliminate the instances of indefiniteness. Support for these amendments can be found on page 50, lines 3-12 of the specification of the instant application.

Thus, the 35 U.S.C. § 112, second paragraph, rejection should be withdrawn.

Claims 1 and 11 stand rejected under 35 U.S.C. § 103(a), as unpatentable over **Sterett et al.** in combination with **Kudoh et al.** (both previously applied) and further in combination with U.S. Patent 6,309,711 to Tseng et al. (hereafter, "**Tseng et al.**").

Applicants respectfully traverse this rejection.

Sterett et al. discloses a method and apparatus for the formation of a three-dimensional article, in which droplets are deposited in a predetermined pattern at a predetermined rate onto a target to form the three-dimensional article. However, **Sterett et al.** fails to disclose the steps and other features of claims 1 and 11, as amended.

Kudoh et al. discloses forming a thick film circuit pattern defined by continuously feeding a paste, but fails to disclose intermittently jetting a molten metal against a construction member to define a row of metal grains. In **Kudoh et al.** the distance from a given level to the surface of the substrate is measured without contacting it to detect irregularities and controlling

the nozzle position above the substrate according to the detected surface irregularities while the nozzle moves along the path of a circuit pattern so that the nozzle slit opening follows a path closely parallel with the surface contour of the substrate. However, Kudoh et al. fails to disclose the steps and other features of claims 1 and 11, as amended.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 1 and 11 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Orme-Marmerelis et al. or JP '803 (both previously applied) in combination with Kudoh et al. and further in combination with Tseng et al.

Applicants respectfully traverse this rejection.

Marmerelis et al. discloses that ultra-small satellite droplets of molten metal, generated from capillary break-up, are selectively directed to a predetermined location on a substrate. The satellite droplets can be placed in individual locations or can be overlapped to form a conductive trace.

JP '803 discloses a three-dimensional body as shown in FIGS. 4, 6 and 7, in which molten metal is spouted from a nozzle to form droplets which can be applied to a substrate to form electric circuits defined in a three-dimensional body by arranging electrically conductive and insulating droplets, each droplet determined to be positioned as an element of the body. However, JP '803 fails to disclose the steps or other features of claims 1 and 11, as amended.

Tseng et al. discloses no more than formation of a three-dimensional article by providing uniform size droplets of a desired material, and fails to disclose the steps and other features of claims 1 and 11, as amended.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 7, 8, and 17-18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over **Orme-Marmerelis et al.**, **Sterett et al.** or **JP '803** in combination with **Kudoh et al.** and further in combination with **Tseng et al.** and further in combination with **Pan** (previously applied).

Applicants respectfully traverse this rejection.

None of the cited references disclose the following steps and features recited in claims 1 and 11, as amended:

- (a) a data is associated with a reference coordinate system provided in the machine,
and the data includes coordinates of points for determining arrangement of the electric circuit, a distance between any two of the points adjacent each other, and a cross-sectional area of the electric circuit extended between the two points;
- (b) the step of converting the data to a second set of data associated with the reference coordinate system provided in a construction member and the step of depositing the molten metal on a surface of the construction member to form the electric circuit on the construction member based on the second set of data;
- (c) the deposited metal grains can overlap one another such that the electric circuit has the cross-sectional area stored in the second set of data between the two points;

- (d) the molten metal is jetted from a nozzle an the nozzle has X, Y, Z axes perpendicular to each other, the nozzle moving along each of the X, Y, Z axes, the nozzle moving along in a circumferential direction around each of the X axis and the Y axis.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 51-56 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Orme-Marmarelis et al., Sterett et al. or JP '803 in combination with Kudoh et al. and further in combination with Tseng et al. and further in combination with Japanese Patent 11-40937 (hereafter, "JP '937").

Applicants respectfully traverse this rejection.

JP '937 discloses injection of compressed gas into a pot of molten solder to jet the solder through a mask and onto a substrate.

JP '937, like the other cited references discussed above, fails to teach, mention or suggest the features of claims 1 and 11, as amended, from which these claims depend.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, claims 1, 7-8, 11, 17-18 and 51-56, as amended, are in condition for allowance, which action, at an early date, is requested.

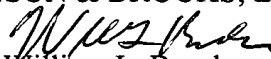
If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. **10/047,992**
Response to Office Action dated May 8, 2006

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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